

Remarks

Reconsideration and entry of the above amendments and the following remarks are respectfully requested. By this amendment, claims 25, 31-33, 47, 50, 52-56, 58, 61-66, 69, 79 and 81-82 have been amended and claims 29, 67 and 77 have been cancelled. Thus claims 25, 31-35, 37-50, 52-66, 69-74, and 78-82 are pending. In addition, Replacement Sheets of FIG. 1, 2, 3, 7A and 7B are attached, the changes therein being explained below.

An Information Disclosure Statement and fee accompany this Amendment.

The Applicant provides below its specific remarks and arguments in respect to each of the Examiner's comments as set out in the numbered paragraphs of the office action.

Paragraph 2

The Examiner withdrew claim 82 from consideration as being directed to a non-elected invention. The Examiner argues that the claim is directed to an invention that is independent or distinct from the invention originally claimed in the application. The Examiner submits that claim 82 is directed to controlling the generation of hydrogen based on the price of electricity and thus has separate utility such as the distribution of services or products in a building by an "auction" or bidding system.

The Applicant submits that claim 82 does not expressly claim such utility and it is not clear to Applicant how the Examiner arrives at such a construction of the claim. There is no reference in claim 82 to the distribution of services or products within a building by an auction or bidding system. The Applicant further notes that claim 82 is similar to claim 53 which depends from claim 25 and for that reason should not be considered independent or distinct. The Applicant submits that claim 82 should not be withdrawn from consideration by the Examiner.

Reconsideration and allowance of the claim is therefore respectfully requested.

Paragraph 3

The Examiner objected to certain drawings under 37 CFR 1.83(a). The Applicant maintains that all of its pending claims meet the requirements of 37 CFR 1.83(a) on the basis that the features are either shown or their detailed illustration is not essential for a proper understanding of the invention. However, in the interest of moving this application forward to allowance, and without conceding in any way that the drawings do not meet the requirements, the Applicant addresses each of the Examiner's objections below. Corrected drawing sheets are attached for consideration and acceptance of the Examiner.

In respect to claims 67 and 77, the Applicant has cancelled the claims without prejudice to pursuing the claims again in the future.

In respect to claim 43, the Applicant has amended pages 17 and 20 of the specification to specifically refer to an "internal combustion engine". Claim 20 as originally filed refers to a user being an internal combustion engine. Accordingly, the applicant submits that no new matter has been added to the specification and that the requirements of 37 CFR 1.83(a) have been met.

In respect to claims 47-49, the applicant has amended Figures 1, 2 and 7A to show the different types of primary energy resources P including renewable energy resources R. The applicant has also amended the specification to include a description of the subject matter in connection with each amended figure. The subject matter shown and described was already described at page 4 line 19, page 5 lines 1-2 and page 8 lines 19-24 of the specification and accordingly the applicant submits that no new matter has been added and that the requirements of 37 CFR 1.83(a) have been met.

In respect to claims 50, 52, 53 and 66, the Applicant has amended Figures 1, 2, 3 and 7A to show data pertaining to hydrogen demand D, hydrogen generator status S and electrical energy availability A. The Applicant has also amended figure 2 to show the data storage means 23 included within controller 14. The applicant has also amended the specification to include figure

references in respect to the subject matter shown in each amended figure. The applicant submits that no new matter has been added and that the requirements of 37 CFR 1.83(a) have been met.

In respect to claim 56, the Applicant has amended Figures 1, 2, 7A and 7B to show the subject matter identified by the Examiner. The applicant has also amended the specification to include a description of the subject matter in connection with each amended figure. The subject matter shown and described is already described at page 9 lines 18-20 and page 11 lines 25-30 of the specification and accordingly the applicant submits that no new matter has been added and that the requirements of 37 CFR 1.83(a) have been met.

In respect to claims 70 and 71, the Applicant has amended the specification to include a description of the storage unit 726 shown in Figure 7A as including compressed gas, liquid H₂, hydrides, etc. The subject matter shown and described is already described at page 10 lines 12-13 of the specification and accordingly the applicant submits that no new matter has been added and that the requirements of 37 CFR 1.83(a) have been met.

Paragraph 4

The Examiner objected to the title of the invention as being non-descriptive. The Applicant previously amended the title to read "Hydrogen Energy System" on page 2 of Applicant's prior response. It appears to the Applicant that the Examiner may have overlooked this amendment. If the amended title is not acceptable to the Examiner, more explanation as to why the title is not clearly descriptive is respectfully requested. Reconsideration and allowance of the previously amended title is respectfully requested.

Paragraph 5

The Examiner rejected claims 67 and 77 under 35 USC 112 as failing to comply with the written description requirement. The Applicant has cancelled claims 67 and 77 without conceding that the claims are defective under 35 USC 112.

Paragraph 7

The Examiner rejected claims 50, 52-56, and 62-67 under 35 USC 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Applicant has amended each of the claims (other than cancelled claim 67) to provide a proper antecedent basis for the identified limitations and submits that the amended claims meet the requirements under 35 USC 112.

Paragraph 8

The Examiner rejected claims 25, 29, 31, 32, 33, 34, 35, 37-44, 66, 71, 72, 73, 74, 79, 80 and 81 under 35 USC 102(b) as being anticipated by Ewan. Claims 25, 79 and 82 have been amended to define the invention more clearly and thus, obviate the rejection. In particular, these claims have been amended to recite a hydrogen energy storage system for use off-board a vehicle.

Ewan is directed to a load management system disposed onboard a vehicle for hydrogen-oxygen fuel cells used for powering such vehicle. The system includes an electrolyzer 15 that is “powered either by a regenerative braking system or by excess power output from fuel cell stacks 1, 2” (see column 4 lines 35- 37). The system thus generates its own electrical energy for powering the electrolyser rather than using electrical energy received from at least one source of electric energy. The electrolyzer generates oxygen that can then be passed to an oxygen storage tank 9. The electrolyzer also generates hydrogen however such hydrogen is not stored in hydrogen gas storage tank 4. Instead, the hydrogen gas that is generated by electrolyzer 15 “is immediately directed into the fuel cell, to supplement the hydrogen from storage vessel 4” (see column 4 lines 63-64). The Examiner refers to column 7 lines 14-16 as disclosing that hydrogen may be stored in hydrogen storage tank 4. The Applicant submits that, despite this reference, the system disclosed in Ewan would not function to permit such storage in view of hydrogen line 21 being connected with hydrogen manifold line 59 downstream of pressure regulating valve 57 and hydrogen solenoid valve 110 as well as hydrogen pressure transducer 123. Accordingly, the Applicant submits that Ewan does not disclose an off-board system that generates hydrogen from a source of electrical energy and stores at least some of the hydrogen in a hydrogen storage apparatus.

To further clarify the intended meaning of independent claims 25 and 79, the Applicant has amended each claim to specify that the controller controls the generation of hydrogen based, at least in part, upon the control inputs including the identified data concerning the availability of electrical energy (claim 25) or concerning one or more demands for hydrogen (claim 79).

In view of the above described differences from the Applicant's invention, and further in view of the amendments made to independent claims 25 and 79 to clarify the meaning of the claims, the Applicant submits that claims 25 and 79, together with all claims depending therefrom, are allowable under 35 USC 102 over Ewan.

Paragraph 9

The Examiner rejected claims 45-49, 54, 57-61, 62 and 63 under 35 USC 103(a) as being unpatentable over Ewan in view of Pritchard. The Applicant repeats the statements made above in respect to Ewan and further repeats the statements made in Applicant's prior response in respect to Pritchard. In view of the differences over Ewan as noted above, and in view of the previous arguments made in respect to Pritchard, the Applicant respectfully submits that all of the identified claims are allowable under 35 USC 103(a). The Applicant further notes that a person skilled in the art would not be motivated to combine the two references in the manner suggested by the Examiner given that Ewan is directed to an onboard system and Pritchard is directed to an off-board wind farm system.

Paragraph 10

The Examiner rejected claims 55, 56 and 77 under 35 USC 103(a) as being unpatentable over Ewan in view of Ishamuru and claims 64 and 65 in view of Ewan, in view of Pritchard and Ishamuru. The Applicant repeats the statements made above in respect to Ewan and further repeats the statements made in Applicant's prior response in respect to Pritchard. The Applicant further notes that Ishamuru is directed to an energy supply system that utilizes an external supply of methane gas that is reformed into hydrogen gas using reformer 15. The electrolyser disclosed in Ishamuru relies upon an internal source of electrical energy to generate hydrogen (namely

superfluous power generated by the fuel cell 10). In view of the differences over Ewan as noted earlier, as well as the previously made arguments in respect to Pritchard and the differences noted above in respect to Ishamuru, the Applicant respectfully submits that all of the identified claims are allowable under 35 USC 103(a). The Applicant further notes that a person skilled in the art would not be motivated to combine Ewan with the other the two references in the manner suggested by the Examiner given that Ewan is directed to an onboard system and Pritchard and Ishamuru are each directed to off-board systems.

Paragraph 11

The Examiner rejected claims 69 and 70 under 35 USC 103(a) as being unpatentable over Ewan in view of Checketts. The Applicant repeats the statements made above in respect to Ewan and further repeats the statements made in Applicant's prior response in respect to Checketts. In view of the differences over Ewan as noted above, and in view of the previous arguments made in respect to Checketts, the Applicant respectfully submits that all of the identified claims are allowable under 35 USC 103(a).

Paragraph 12

The Examiner rejected claims 50, 52, 53 and 67 under 35 USC 103(a) as being unpatentable over Ewan in view of Meystel. The Applicant repeats the statements made above in respect to Ewan and further repeats the statements made in Applicant's prior response in respect to Meystel. With reference to the Examiner's comment that Applicant's previous argument failed to comply with 37 CFR 1.111(b), the Applicant again points out that Meystel does not appear to disclose the subject matter suggested by the Examiner. The Examiner's reference to column 8 lines 1-64 of Meystel does not clearly disclose or suggest the subject matter identified in the rejected claims. In the absence of any clear reference to the relevant subject matter, Applicant is unable to point out more specifically how the subject matter of Applicant's claims is patentably distinguished over the cited reference. The Applicant respectfully requests that the Examiner point to the specific portion of Meystel that supports the Examiner's position if the Examiner wishes to maintain its rejection. In view of the differences over Ewan as noted above, and in

view of the arguments made in respect to Meystel, the Applicant respectfully submits that all of the identified claims are allowable under 35 USC 103(a).

Paragraph 13

The Examiner rejected claims 50, 52, 53, 67 and 78 under 35 USC 103(a) as being unpatentable over Ewan in view of McNamara. The Applicant repeats the statements made above in respect to Ewan and further repeats the statements made in Applicant's prior response in respect to McNamara. With reference to the Examiner's comment that Applicant's previous argument failed to comply with 37 CFR 1.111(b), the Applicant again points out that McNamara does not appear to disclose the subject matter suggested by the Examiner. The Examiner's reference to columns 7-8 claims 14 of McNamara does not clearly identify the subject matter identified in the rejected claims. The Applicant respectfully requests that the Examiner point to the specific portion of McNamara that supports the Examiner's position if the Examiner wishes to maintain the rejection. In view of the differences over Ewan as noted above, and in view of the previous arguments made in respect to McNamara, the Applicant respectfully submits that all of the identified claims are allowable under 35 USC 103(a).

In summary, the Applicant submits that it has overcome all of the objections raised by the Examiner and requests entry of the amendment and allowance of the claims that have been submitted herewith.

Respectfully submitted,



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